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Applicant: Shiseido Co., Ltd.

Title of Invention: Foaming Aerosol Cosmetic

Disclosure A: (Column 1, lines 1 to 33)

"[Claims]

[Claim 1] A foaming aerosol cosmetic comprising a stock liquid containing at least one of a polymer resin compound and at least one of a polyoxyethylene alkyl ether, and a propellant.

[Claim 2] The foaming aerosol cosmetic according to claim 1 wherein said polymer resin compound is at least one selected from the group consisting of an ampholytic polymer resin compound, a cationic polymer resin compound, an anionic polymer resin compound and a nonionic polymer resin compound.

. . . . .

[Claim 7] The foaming aerosol cosmetic according to any one of claims 1 to 6 wherein the number of additional moles of polyoxyethylene to polyoxyethylene alkyl ether is 10 ~ 20 and the number of carbons of alkyl group is 10 ~ 20.

[Claim 8] The foaming aerosol cosmetic according to any one of claims 1 to 7 wherein said propellant is a liquefied petroleum gas (LPG) and/or dimethyl ether (DME).

[Claim 9] The foaming aerosol cosmetic according to any one of claims 1 to 8 wherein polyoxyethylene alkyl ether is polyoxyethylene lauryl ether (the number of additional moles of polyoxyethylene is 10 ~ 15)."

Disclosure B: (Column 6, lines 28 to Column 10)

"[0017] The foaming aerosol cosmetics in Examples 1 ~ 11 and Comparable Examples 1 ~ 11 shown in Tables 1 ~ 3 each were prepared by employing the conventional method (the propellant wherein the ratio of LPG/DME is 40 / 60 was used, and the foaming aerosol cosmetic wherein the ratio of the stock liquid/ the propellant is 80/20 was used), and the results evaluated by the evaluation method mentioned above are shown in Table 1 ~ 3.

[0018]

{Table 1}

		Examples					
		1	2	3	4	5	6
Polyoxyethylene (15) lauryl ether		0.2	0.2		0.01	0.05	1.0
Polyoxyethylene (20) stearyl ether				0.2			
Polyoxyethylene (30) harden castor oil							
Polyoxyethylene (20) sorbitanolate							
Polyoxyethylene (10) nonylphenyl ether							
Amphoteric surfactant							
Alkyl trimethylammonium chloride							
Amphoteric polymeric resin compound		1.0		1.0	1.0	1.0	1.0
Anionic polymeric resin compound			1.0				
Aminomethylpropanol			0.2				
Carboxy vinyl polymer							
Ethanol (95%)		10.0	10.0	10.0	10.0	10.0	10.0
Purified water		*	*	*	*	*	*
Evaluation	Foaming property	○	○	○	○	○	○
	Stability of foam	○	○	○	○	○	○

\* Residue

【Table 2】

		Examples					
		7	8	9	10	11	12
Polyoxyethylene (15) lauryl ether		5.0	0.2	0.2	0.2	0.2	0.2
Polyoxyethylene (20) stearyl ether							
Polyoxyethylene (30) harden castor oil							
Polyoxyethylene (20) sorbitanolate							
Polyoxyethylene (10) nonylphenyl ether							
Amphoteric surfactant							
Alkyl trimethylammonium chloride							
Amphoteric polymeric resin compound		1.0	0.01	0.05	0.5	3.0	10.0
Anionic polymeric resin compound							
Aminomethylpropanol							
Carboxy vinyl polymer							
Ethanol (95%)		10.0	10.0	10.0	10.0	10.0	10.0
Purified water		*	*	*	*	*	*
Evaluation	Foaming property	○	○	○	○	○	○

Stability of foam      ○      ○      ○      ○      ○      ○

\* Residue

【Table 3】

		Comparastive Examples					
		1	2	3	4	5	
Polyoxyethylene (15) lauryl ether							
Polyoxyethylene (20) stearyl ether							
Polyoxyethylene (30) harden castor oil		0.2					
Polyoxyethylene (20) sorbitanolate			0.2				
Polyoxyethylene (10) nonylphenyl ether				0.2			
Amphoteric surfactant					0.2		
Alkyl trimethylammonium chloride						0.2	
Amphoteric polymeric resin compound		1.0	1.0	1.0	1.0	1.0	
Anionic polymeric resin compound							
Aminomethylpropanol							
Carboxy vinyl polymer							
Ethanol (75%)		10.0	10.0	10.0	10.0	10.0	10.0
Purified water		*	*	*	*	*	*
Evaluation	Foaming property	×	×	×	×	×	×
	Stability of foam	×	×	×	×	×	×
* Residue							

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(71)Applicant : SHISEIDO CO LTD

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(72)Inventor : MOMOSE HIROSHI  
TAMURA SHOHEI

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**(54) FOAMY AEROSOL COSMETIC**

(57)Abstract:

PURPOSE: To provide a foamy aerosol cosmetic having excellent foam properties. and stability of foam.

CONSTITUTION: This foamy aerosol cosmetic comprises a stock solution composed of one or more of polymer resin compounds and one or more of polyoxyethylene alkyl ethers and a propellant. Especially the polymer resin compound is one or more selected from among an ampholytic polymer resin compound, a cationic polymer resin compound, an anionic polymer resin compound and a nonionic polymer resin compound. The number of mols of addition of polyoxyethylene to the polyoxyethylene alkyl ether is 10-20 and the number of carbons of alkyl group is 10-20.

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**CLAIMS**

[Claim(s)]

[Claim 1]Foamy aerosol cosmetics which consist of an undiluted solution containing a kind of a polymer resin compound, two or more sorts and a kind of polyoxyethylene alkyl ether, or two sorts or more, and propellants.

[Claim 2]The foamy aerosol cosmetics according to claim 1, wherein a polymer resin compound is a kind chosen from an amphoteric polymer resin compound, a positive ion nature polymer resin compound, a negative ion nature polymer resin compound, and a nonionic polymer resin compound, or two sorts or more.

[Claim 3]The foamy aerosol cosmetics according to claim 1, wherein a polymer resin compound is an amphoteric polymer resin compound.

[Claim 4]The foamy aerosol cosmetics according to claim 1, wherein a polymer resin compound is a negative ion nature polymer resin compound.

[Claim 5]The foamy aerosol cosmetics according to claim 1, wherein a polymer resin compound is a positive ion nature polymer resin compound.

[Claim 6]The foamy aerosol cosmetics according to claim 1, wherein a polymer resin compound is a nonionic polymer resin compound.

[Claim 7]The foamy aerosol cosmetics according to claim 1 to 6, wherein the numbers of addition mols of a polyoxyethylene of polyoxyethylene alkyl ether are 10-20 and carbon numbers of an alkyl group are 10-20.

[Claim 8]The foamy aerosol cosmetics according to claim 1 to 7, wherein propellants are liquefied petroleum gas (LPG) and/or wood ether (DME).

[Claim 9]The foamy aerosol cosmetics according to claim 1 to 8, wherein polyoxyethylene alkyl ether is polyoxyethylene lauryl ether (the numbers of addition mols of a polyoxyethylene are 10-15).

## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application]This invention relates to the foamy aerosol cosmetics excellent in foam quality and foam stability used especially for hair about foamy aerosol cosmetics.

[0002]

[Description of the Prior Art]Conventionally, the aerosol type thing is used for cosmetics and foamy aerosol cosmetics came to be used widely in recent years. The constituent in which foamy aerosol cosmetics have functions (for example, hairdressing function etc.) in an aerosol can, That is, the propellants which consist of an undiluted solution, a liquefied gas, etc. are packed, and an undiluted solution is blown up and it becomes foamy because the liquefied gas included by the undiluted solution part evaporates under atmospheric pressure, at the same time an undiluted solution is injected. Since reversible separation of an undiluted solution is permitted in order to use before that there are almost no restrictions of the viscosity of an undiluted solution, and use as a feature on pharmaceutical preparation, shaking, and undiluted solution-shaped flexibility is high, there are many functional goods that it is easy to pursue a new function. For example, when what is used for hair is mentioned, there are a type which is mainly concerned with setting ability, a type which is mainly concerned with a treatment, and a type which takes out wet gloss. furthermore -- the time of spouting also in foamy aerosol cosmetics in recent years -- a bubble -- it is not (for example, misty state) -- when it sends on a palm, hair, etc., the foamy aerosol cosmetics of the post expansion type which becomes foamy have been used. In foamy aerosol cosmetics, foam quality (fineness of a texture, etc.), foam stability (durability of a bubble), etc. are greatly connected with commodity value, and when they provide foamy aerosol cosmetics, they have been big technical problems. Then, although the trial which improves the durability of foam quality and a bubble conventionally was made, it was not yet enough and the actual condition was that there is still no solution in particular about a post expansion type thing.

[0003]

[Means for Solving the Problem]In order that this invention persons may solve said technical technical problem, as a result of repeating research wholeheartedly, by making it contain in an undiluted solution of foamy aerosol cosmetics combining a specific polymer resin compound and specific polyoxyethylene alkyl ether, It finds out that foamy

aerosol cosmetics excellent in foam quality (fineness of a texture) and foam stability (durability) are obtained, and came to complete this invention.

[0004] That is, this invention is foamy aerosol cosmetics which consist of an undiluted solution containing a kind of a polymer resin compound or two sorts or more, and polyoxyethylene alkyl ether, and propellants.

[0005] Composition of this invention is explained in full detail below. Polymer resin compounds used for this invention are an amphoteric polymer resin compound, a positive ion nature polymer resin compound, a negative ion nature polymer resin compound, and a nonionic polymer resin compound, and can make a kind or two arbitrary sorts or more select and contain out of these.

[0006] As an amphoteric polymer resin compound, it is a general formula, for example. :  
[Formula 1]

(It is the range of  $n:m=90:10 - 50:50$ , and the ranges of a molecular weight are 50,000-500,000.) The alkyl group in which, as for a hydrogen atom or a methyl group, and R3 and R4, R1 and R6 have 1-4 carbon atoms, The alkyl group of the saturation in which the alkylene group in which R2 and R5 have 1-4 carbon atoms, and R7 have 1-24 carbon atoms, or an unsaturation, A is an oxygen atom or an NH group, and a talk. Dialkylamino ethyl acrylate expressed, The compound which carried out copolymerization of acrylic acid, methacrylic acid, acrylic acid alkyl ester, the methacrylic acid alkyl ester, etc. to dialkylamino ethyl methacrylate, diacetone acrylamide, etc., and was both sexes-ized with halogenation acetic acid [There is Yuka Former AM-75 (made by Mitsubishi Petrochemical Co., Ltd.) etc. as a marketing article. ]\*\* is mentioned.

[0007] As a positive ion nature polymer resin compound, it is poly (dimethyldiaryl ammonium halide) mold cationic polymer, for example. [There are MAKOTO 100 (made by U.S. Merck Co.) etc. as a marketing article. ] Copolymer cationic polymer of dimethyldiaryl ammonium halide and acrylamide [There are MAKOTO 550 (made by U.S. Merck Co.) etc. as a marketing article. ] Or the 4th class nitrogen content cellulose ether [There are polymer JR-400, polymer JR-125, polymer JR-30M (made in U.S. Union Carbide), etc. as a marketing article. ] Or a condensate of a condensate of a polyethylene glycol, epichlorohydrin, dipropylenetriamine, and beef tallow alkylamine or a

polyethylene glycol, epichlorohydrin, dipropylenetriamine, and palm oil alkylamine [There are the poly coat H (made by West German Henkel KGaA) etc. as a marketing article. ]Or a vinyl-pyrrolidone dimethylaminoethyl methacrylate copolymer cation ghost as [marketing article -- a gaff -- the coat 755 and a gaff -- there are the coat 734 (made by U.S. GAF) etc. ]\*\* is raised.

[0008]Acrylic resin alkanolamine which are acrylic acid and/or methacrylic acid, and a copolymer of acrylic acid alkyl ester and/or methacrylic acid alkyl ester as a negative ion nature polymer resin compound, for example [There are the plus size L-33, L-53 series (made by \*\*\*\*\* Co.), etc. as a marketing article. ]A copolymer of the methyl vinyl ether and maleic acid monobutyl ester [There are cancer TORETTSU ES-425 (made by GAF), cancer TORETTSU ES-225 (made by GAF), cancer TORETTSU ES-335 (made by GAF), etc. as a marketing article. ]A copolymer of acrylic acid hydroxypropyl, butyl methacrylate aminoethyl, and acrylic acid KUCHIRU amide [There are Amphomer LV-71, 28-4910 (made by Kanebo NNC), etc. as a marketing article. ]Vinyl acetate, crotonic acid, a copolymer of neo decanoic acid vinyl [There is RESYN 28-2930 (made by Kanebo NNC) etc. as a marketing article. ]\*\* is mentioned.

[0009]As a nonionic polymer resin compound, it is copolymer of polyvinyl alcohol, a polyvinyl pyrrolidone, carboxymethyl cellulose, a carboxyvinyl polymer, a polyvinyl pyrrolidone and vinyl pyrrolidone, and vinyl acetate. [There are PVP-K, PVP/VA (made by GAF), etc. as a marketing article. ]A copolymer of vinyl pyrrolidone, vinyl acetate, and acrylic amino acrylate, etc. are mentioned.

[0010]Especially a polymer resin compound used for this invention has an amphoteric polymer resin compound and a preferred negative ion nature polymer resin compound also in the above. Content of a polymer resin compound used for this invention is 0.01 to 10.0 % of the weight in an undiluted solution of foamy aerosol cosmetics, and is 0.05 to 5.0 % of the weight preferably. When an improvement effect of foam quality and foam stability becomes insufficient when content is less than 0.01 % of the weight and it exceeds 10.0 % of the weight, when using it, it may be sticky and admiration may remain.

[0011]The number of polyoxyethylene addition mols is a thing of 10-20, and polyoxyethylene alkyl ether used for this invention has [ especially a thing of a straight chained alkyl group of 10-20 ] a preferred carbon number of an alkyl group. Polyoxyethylene lauryl ether (the numbers of polyoxyethylene addition mols are 10-15) is still more preferred also in these. When separating from the range of the above [ the number of addition mols of a polyoxyethylene, and a carbon number of an alkyl group ], an improvement effect of foam quality and foam stability may not be enough. In this invention, a kind or two arbitrary sorts or more can be selected and used out of these. Content of polyoxyethylene alkyl ether used for this invention is 0.01 to 5 % of the weight in an undiluted solution of foamy aerosol cosmetics, and is 0.1 to 1.0 % of the weight preferably.

[0012]In addition to the above-mentioned essential ingredient, vitamins, such as vasodepressor, such as chloridation KAPURONIUMU, vitamin A, vitamin B, vitamin C, vitamin D, and vitamin E, may be blended with foamy aerosol cosmetics of this invention. An ingredient generally used in cosmetics can be blended within quantitative qualitative limits which does not spoil an effect of this invention. For example, a high molecular compound, an ampholytic surface active agent, a cationic surfactant, an

anionic detergent, A nonionic surfactant, ester species, fatty acid, higher alcohol, lanolin, Oil and fat, such as a silicone derivative, a natural extract of animals and plants, and its derivative, Moisturizers, such as hydrophilic organic solvents, such as a color, coloring matter, paints, perfume, an antiseptic, a chelating agent, organic acid, ultraviolet inhibitor, water, and ethanol, glycerin, propylene glycol, and ethylene glycol, a germicide, an antimicrobial agent, a protein derivative, etc. are mentioned.

[0013]As propellants used for foamy aerosol cosmetics of this invention, if generally used for an aerosol composition, anything, it will be good, for example, LPG (liquefied petroleum gas), DME, butane, hydrogen, nitrogen, etc. will be mentioned. In especially foamy aerosol cosmetics of this invention, a mixture of LPG and DME is preferred also in these propellants. Although limitation in particular is not carried out about the mixture ratio of this mixture, a thing of LPG/DME=10 / 90 - 100/0 is remarkably excellent in a weight ratio also in this. Especially when using it as post expansion type foamy aerosol cosmetics, LPG/DME=10 / 90 - 50/50 are preferred. Although a content ratio of an undiluted solution and propellants does not carry out limitation in particular, within the limits of undiluted solution/propellants =50 / 50 - 90/10 is preferred also especially in it.

[0014]Although foamy aerosol cosmetics used for this invention are mainly used for cosmetics for hair, naturally they can be used by blending an ingredient which has a function, respectively also as other cosmetics, for example, foundation, a lotion, a milky lotion, a pack, an antiperspirant, and a hand cream.

[0015]

[Example]Next, an example explains the effect of this invention in more detail. This invention is not limited by this. All loadings are weight %. The appraisal method enforced by the example and the comparative example in advance of this is explained.

[0016]About foam quality and foam stability examination each sample, the actual use examination was done by the special researcher, and viewing observed and estimated observation and foam stability of foam quality. The valuation method followed the following standards.

(1) Foam quality O : there is delicacy of a bubble and appearance is beautiful.

x: There is no delicacy of a bubble and appearance is bad.

(2) Foam stability O : the temporal duration of the bubble after injection and foaming is 1 minutes or more.

x: The temporal duration of the bubble after injection and foaming is less than 1 minute.

[0017]The foamy aerosol cosmetics of Examples 1-11 of a statement and the comparative examples 1-10 were produced with the conventional method to Tables 1-3, respectively (in addition, propellants used the thing of the ratio of LPG/DME=40/60, and undiluted solution/propellants =80/20.), and the result evaluated by the above-mentioned valuation method was shown in Tables 1-3.

[0018]

[Table 1]



[0019]  
[Table 2]

[0020]  
[Table 3]

[0021]The inside of the inside 1-3 of front and an ampholytic surface active agent are the undecyl- N. - Hydroxyethyl N - Carboxymethyl imidazolinium betaine, An amphoteric polymer resin compound is N. - Meta-clo yl ethyl, N,N dimethylannmonium, and alpha-N - Methyl carboxyl betaine butyl methacrylate copolymer, A negative ion nature polymer resin compound is an acrylic acid hydroxypropyl butyl methacrylate aminoethyl acrylic acid octylamide copolymer. [0022]Example 12 foamy aerosol cosmetics (1) ethanol (95%). 20.0(2) amphoteric-polymer resin compound (notes 1). 1.5(3) polyoxyethylene (12) lauryl ether . 0.1(4)1,3-butylene glycol . 0.4 (5) polyoxyethylene (60) hydrogenated castor oil . 0.5. (6) Dimethylpolysiloxane 2.0(7) residual-purified-water (propellants) LPG/DME=90/10 undiluted solution / propellants =90/10(notes 1)N-meta clo yl ethyl, N,N dimethylannmonium, and alpha-N - Methyl carboxyl betaine butyl methacrylate copolymer (process)

Addition mixing of (1), (2), and (3) is carried out what mixed (4), (5), (6), and a little (7). Subsequently, it was filled up with propellants after filling up a can with this undiluted solution, and foamy aerosol cosmetics were obtained.

[0023]example 13 foamy aerosol cosmetics (1) ethanol (95%) 15.0(2) negative-ion nature polymer resin compound (notes 2) 0.5(3) aminomethyl propanol 0.1(4) polyoxyethylene (20) octyl ether 0.5 (5) liquid paraffins . 5.0 (6) glycerin 3.0 (7) perfume . They are (8) methylparaben in proper quantity. Optimum dose (9) purified water Residue (propellants) LPG/DME=70 / 30 undiluted solutions / propellants = 80 / 20 (notes 2) acrylic-acid hydroxypropyl butyl methacrylate aminoethyl acrylic acid octylamide copolymer (process)

Stirring mixing of (1), (2), (3), (4), (5), (6), (7), and (8) is carried out. Subsequently, it was filled up with propellants after filling up a can with this undiluted solution, and foamy aerosol cosmetics were obtained.

[0024]Example 14 foamy aerosol cosmetics (1) polymer JR-400. 1.0. (2) Ethanol. (95%). 8.0(3) polyoxyethylene (10) milli SUTERU ether . 0.5 (4) silicone oil 5.0 (5) perfume Optimum dose (6) methylparaben Optimum dose (7) purified water Residual (propellants) LPG/DME=60 / 40 undiluted solutions / propellants = stirring mixing of 75/25 process (1), (2), (3), (4), (5), (6), and (7) is carried out. Subsequently, it was filled up with propellants after filling up a can with this undiluted solution, and foamy aerosol cosmetics were obtained.

[0025]Example 15 post-expansion type foamy aerosol cosmetics (1) PVP/VA. 0.8 (2) ethanol (95%) 10.0(3) polyoxyethylene (10) lauryl ether 0.3(4)1,3-butylene glycol 0.3(5) methylphenyl polysiloxane 1.0 (6) methylparaben . It is (7) purified water in proper quantity. Residual (propellants) LPG/DME=10 / 90 undiluted solutions / propellants = addition mixing of (1), (2), and (3) is carried out what mixed 70/30 process (4), (5), (6), and a little (7). Subsequently, it was filled up with propellants after filling up a can with this undiluted solution, and post expansion type foamy aerosol cosmetics were obtained.

[0026]The foamy aerosol cosmetics of the above-mentioned Examples 12-15 were excellent in foam quality and foam stability.

[0027]

[Effect of the Invention]The foamy aerosol cosmetics of this invention are foamy aerosol cosmetics excellent in foam quality and foam stability.

[Table 4]

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[Translation done.]